

CHEMICAL WEED CONTROL FOR COMMERCIAL APPLE ORCHARDS IN CENTRAL AND EAST TEXAS

Rupert D. Palmer and Arlie A. Powell*

Many producers who either plan to plant apples or have planted apples will need chemical weed control information. Extensive research on the use of herbicides in commercial apple orchards has not been conducted in Texas. The herbicides described below are registered for use in apple plantings and are being used in other states. Most of Texas' pecan and peach growers are familiar with the herbicides described below, and are using many of them for weed control.

These herbicides must be used on a small trial basis before extensive application throughout the orchard.

Soils and Herbicides

A variation of rates (example, 8 to 12 pounds per acre) of herbicides applied before emergence of weeds (preemergence) is suggested on the basis of soil texture and soil organic matter. Use the low rate on sandy loams and the higher rates on silt loams, loams, silty clay loams and clay loams. When choosing a rate for a soil type, also consider organic matter of the soil. Use the low rate where organic matter is low (less than 1 percent) and higher rates where the organic matter is high (more than 2 percent).

For herbicides used after weed emergence (post-emergence), select a rate from within the variation according to the size and stage of growth of the weeds and the age of the apple trees.

Site Preparation for Preemergence Herbicides

If weeds are dense in the area to be planted, the site can be plowed and prepared for planting. Paraquat can be sprayed prior to plowing if the treatment is economical. Proper soil preparation is

essential for both new and established plantings to make the area free of crop residue and weeds. The soil surface in the area between and around the trees should be smooth before application of herbicides.

Spray Equipment

Use equipment that is accurately calibrated. A helpful Extension publication on sprayer calibration and spraytank agitation is L-764, *Pesticide Application Ground Equipment Calibration Guide*. Also, equipment suppliers have sprayer information about the proper nozzle to use for a specific speed, nozzle spacing and volume of water to apply per acre. Proper spraytank agitation is very important when using the preemergence herbicides. When spraying, avoid overlapping the spray under and around the trees.

Irrigation and Herbicide Application

Irrigation should follow herbicide application. The preemergence herbicides, Dymid, Enide, Princep, Karmex and Sinbar, should be sprayed on the prepared soil before the weeds emerge. Either moderate irrigation or rainfall is necessary to leach these herbicides into the top soil for weed control. Casoron should be incorporated into the soil after application and then irrigated.

Weed Control for New Plantings (Non-bearing Orchards)

A weedy site should be disked or plowed and smoothed for planting. For improved control of perennial grasses such as coastal and common bermudagrass and johnsongrass, disk and cultivate the area two or three times during the hot, dry summer. Paraquat treatment also can be used before mechanical preparation. If johnsongrass, nutsedge and other grasses infest the area after planting, spot or

*Respectively, Extension weed specialist and Extension horticulturist, The Texas A&M University System.

broadcast spray the weeds with either Ansar 529 HC (only on non-bearing trees) or Paraquat. Spot treat only with either Dowpon M or Basfapon B in the spaces between the trees, and avoid treatment around bases of young trees.

To control annual weeds during the growing season, Casoron should be incorporated in the soil, or Dymid or Enide surface applied to freshly worked, smooth soil, four weeks after planting. Use irrigation after treatment if rainfall is not adequate. Repeat Ansar 529 HC for johnsongrass and nut-sedge only under non-bearing trees. If the trees begin to bear, use Dowpon M or Basfapon B for johnsongrass and bermudagrass control.

After the trees are one year old Princep + Paraquat can be applied at the beginning of the weed growing season. If cultivation controls the emerged weeds, follow cultivation with either Princep alone, Karmex, Casoron, Enide or Dymid. Either Princep or Karmex is suggested on heavier soils because these herbicides are more soil persistent; however, in lighter soils either Casoron or Dymid should be used. Continue the Ansar 529 HC

under non-bearing trees only, and either Dowpon M or Basfapon B for grasses not controlled with the preemergence herbicides.

When trees are three years old, Sinbar can be substituted for either Princep alone, Karmex, Dymid, Enide or Casoron. Sinbar is more effective than the other herbicides for control of purple and yellow nutsedge and other weeds. Also, in four-year-old orchards, either Dowpon M or Basfapon B can be used at a higher rate than in orchards under four years old.

Weed Control in Bearing Orchards

Most of the new plantings of dwarf and semi-dwarf apple varieties will start bearing fruit on a commercial basis during the third or fourth growing season. Weed control in bearing orchards should be continued as described for the non-bearing years by using the same herbicides except for Ansar 529 HC. Tables 1 and 2 provide additional information on selection of chemicals to fill specific needs of producers in their weed control programs. Users of these suggested herbicides should carefully read the product labels prior to using the chemicals.

Table 1. A summary of suggested herbicides based upon age of apple orchards. See Table 2 for detailed information.

Product name of herbicide	For use during establishment and first growing season	For use in nonbearing orchards at least 1 year old	For use in bearing orchards
Preemergence (before weeds emerge)			
Casoron 50W	yes	yes	yes
Dymid 80W	yes	yes	yes
Enide 50W	yes	yes	yes
Princep 80W	no	yes	yes
Karmex 80W	no	yes	yes
Sinbar 80W	no	no ¹	yes ¹
Postemergence (after weeds are emerged)			
Paraquat CL	yes	yes	yes
Ansar 529 HC	yes	yes	no
Dowpon M	yes ²	yes	yes
BASFapon B	yes ²	yes	yes

¹Sinbar may be used if trees are three years old or older.

²Use during this initial period is limited only to spot treatment in spaces away from trees. Avoid treatment around the bases of young trees.

Table 2. A suggested control program for weeds in an apple orchard.

Weeds controlled	Product and product rate/acre broadcast	Herbicide common name, rate/acre active ingredient broadcast	Spray volume/acre broadcast	Time to apply	Remarks
Top kill of johnsongrass, bermudagrass, nutsedge, silverleaf nightshade, western ragweed. Control of crabgrass, cocklebur, sunflower, common ragweed, sandbur, puncturevine, wood sorrel, barnyardgrass, Russian thistle, kochia and others.	Paraquat CL 1 to 2 qt.	Paraquat 0.5 to 1 lb.	50 to 100 gal. water plus 1 pt. of surfactant X-77 or WK per 100 gal. spray mixture	Apply when weeds are 1 to 6 inches tall.	Use shield for young trees or apply as a directed spray so that spray does not contact foliage, stem, fruit or leaves. Do not apply during windy conditions. Avoid inhaling spray or allowing spray to contact skin. Do not allow animals to graze in treated areas during the year of treatment.
Johnsongrass, purple and yellow nutsedge, dallisgrass, cocklebur, ragweed, sandbur, puncturevine, crabgrass, chickweed, wood sorrel.	Ansar 529 HC 1/3 to 2/3 gal.	MSMA 2 to 4 lb.	50 gal. water	Apply after weeds have emerged and are actively growing; for johnsongrass 8 to 10 inches tall, and nutsedges one week after shoot emergence.	Apply as a directed spray in interspaces and around bases of trees. Shield to keep spray from contacting leaves, stems and bark of trees. Do not apply around trees from which fruit will be harvested within one year of treatment. Do not exceed three applications per year.
Crabgrass, annual bluegrass, foxtail, pigweed, mustard, knotweed, groundsel, carpetweed, annual smartweed, purslane, shepardspurge, henbit, chickweed.	Casoron 50W 8 to 12 lb. or Casoron 4G 100 to 150 lb.	dichlobenil 4 to 6 lb.	50 gal. water or granular	Do not apply within four weeks after transplanting. Treat before weed seeds germinate.	Apply as a directed spray around trees and in row in early spring before weeds emerge or after cultivation has removed the growing weeds. Shallow soil incorporation should follow treatment. Do not graze livestock in treated areas during the year of treatment.
Crabgrass, foxtail, goosegrass, barnyardgrass, johnsongrass (from seed), fall panicum, sandbur, ryegrass, annual bluegrass, cheat, pigweed, lambsquarters, smartweed, purslane, chickweed, carpetweed, knotweed, red sorrel, peppergrass, shepardspurge.	Dymid 80W 5 to 7.5 lb. or Enide 50W 8 to 12 lb.	diphenamid 4 to 6 lb.	50 gal. water	Apply to established plantings before weed seeds germinate.	Apply as a directed spray around trees and in row in early spring after clean cultivation has removed growing weeds. Do not apply when fruit is on the tree or within 90 days of harvest. Do not graze livestock in treated areas during the year of treatment.
Paraquat will kill all existing vegetation and simazine will prevent reemergence of most weeds listed. Cocklebur, Texas panicum, dallisgrass (from seed), goathead, green foxtail, johnsongrass (from seed), kochia, pigweed, pitcher sage, Russian thistle, silverleaf nightshade and sunflower. Top kill of bermudagrass.	Princep 80W 2.5 to 5 lb. + Paraquat CL 1 to 2 qt. (tank mix)	simazine 2 to 4 lb. + paraquat 0.5 to 1 lb.	50 to 100 gal. plus 1 pt. of surfactant X-77 or WK per 100 gal. spray mixture	Apply when weeds are 1 to 6 inches tall.	Do not apply during windy conditions. Use shield for young trees or apply so that spray does not contact foliage, stem, fruit or leaves. Do not apply on sandy or gravelly soils, or where tree roots are exposed by soil erosion. Apply simazine + paraquat only under trees established for 1 year or more. Avoid inhaling spray or allowing spray to contact skin. Do not allow animals to graze in treated area during the year of treatment.
	Princep 80W 2.5 to 5 lb.	simazine 2 to 4 lb.	50 gal. water with tank agitation	Apply to weed-free soil after tillage.	Do not apply to sandy or gravelly soils or where tree roots are exposed by soil erosion. Apply only under trees established for one year or more. Do not apply to foliage or fruit.

Table 2 (continued)

Weeds controlled	Product and product rate/acre broadcast	Herbicide common name, rate/acre active ingredient broadcast	Spray volume/acre broadcast	Time to apply	Remarks
Browntop panicum, crabgrass, jungle-rice, pigweed, goatweed, morning-glory and night-shade seedlings.	Karmex 80W 2.0 to 4.0 lb.	diuron 1.6 to 3.2 lb.	50 gal. water with tank agitation	Apply to weed-free soil after tillage. Apply as a directed spray to orchard floor during Spring.	Do not treat dwarf varieties. Do not use on apples where soil organic matter is less than 1%, or on sandy soils. Do not plant treated areas to any other crop for 2 years after treatment. Apply only under trees established for 1 year or more. Avoid spray contact with foliage or fruit.
Nutsedge, seedling johnsongrass, annual bluegrass, crabgrass, pigweed, lambsquarters, ragweed, purslane, chickweed, sheep sorrel, silverleaf nightshade. Reduced vigor in johnsongrass and bermudagrass.	Sinbar 80W 2 to 4 lb.	terbacil 1.6 to 3.2 lb.	50 gal. water with tank agitation	Apply to weed-free soil after tillage.	Single application to soils of orchards established for 3 years or more. Use low rate on light soils with 2% or less organic matter. Do not use on sand, loamy sand or gravelly soils, nor on eroded areas where subsoil and/or tree roots are exposed. Do not replant treated areas to any crop for 2 years after treatment. Do not allow spray to contact foliage or fruit.
Johnsongrass, crabgrass, browntop panicum, Texas panicum, foxtail, barnyardgrass, goosegrass, bermudagrass.	Dowpon M 5.0 lb. or 10.0 lb. or Basfapon B 4.4 lb. or 8.75 lb.	dalapon 3.7 lb. or 7.4 lb.	50 to 80 gal. water plus 1 pt. of surfactant X-77 or WK	Apply when grass has begun to grow well in spring but before heading.	During tree establishment and first growing season use the low rate of either Dowpon M or Basfapon B only as a spot treatment. Avoid treatment around the bases of young trees less than 1 year old. For trees 1 year old and up to four years old, apply the low rate of either Dowpon M or Basfapon B. Use the high rate of either Dowpon M or Basfapon B around trees 4 years old or more. Use a directed broadcast spray on each side of tree row. May split the high rate under trees 4 years old or more by using half the application, followed by the remainder when grasses regrow. Also can use as spot treatment when grasses are a problem. Do not apply within 30 days of harvest. Keep spray off crop foliage and fruit. Apply only twice in one growing season. Wait 4 weeks after treatment before disking treated grasses.

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